

# UNITED STATES PATENT OFFICE.

GODFREY WOONE, OF LONDON, ENGLAND.

## IMPROVED MODE OF FORMING RAISED SURFACES FOR PRINTING ON PAPER, CALICO, &c.

Specification forming part of Letters Patent No. 670, dated April 2, 1838.

*To all whom it may concern:*

Be it known that I, GODFREY WOONE, of London, England, have invented an Improved Method of Forming Plates or Cylinders with Raised Surfaces for Printing and Stamping Impressions on Paper, Silk, Calico, Cotton, and other Fabrics and Substances, of which the following is a specification.

My invention consists in improvements in forming molds or matrices from which casts are to be taken in metal or other substances capable of receiving a sharp impression, having on their surface the relief of the pattern, engraving, writing, or design intended to be printed or impressed on calico, silk, paper, leather, or other fabrics or substances on which impressions are now commonly taken from plates, blocks, or cylinders with raised figures, engravings, or designs produced thereon by cutting, engraving, stamping, etching, or otherwise lowering the parts or interstices between the work intended to be left in relief or from stereotype-casts obtained from such original plates or blocks.

I obtain my molds by the following methods, according to the nature of the pattern, engraving, or design I am desirous of obtaining in relief:

For the finer patterns used in calico or other printing or paper-staining, or for engravings, such as are usually cut on box-wood and printed at a type-press, I make use of the following method: I take white lead and plaster-of-paris in different proportions, about two parts of white lead and one of plaster-of-paris, mixed with water to the consistence of cream. I then pour this mixture or composition on a well-polished and perfectly-even plate or block of metal or other hard substance of the required size, varying the depth of the composition to the height of the required relief.

For work to be printed at the type-press in the manner of wood-engravings, the thickness of the layer or composition need not exceed the twenty-fourth part of an inch; but for coarser patterns or designs—as for calico-printing—the thickness of the composition must be increased to about the eighth part of an inch.

The plate or block covered with the above composition must be left to dry gradually, or baked until it is entirely dry; or, in order to give this coating a more even and perfect sur-

face and obtain with greater exactness the required thickness or height, I lay the composition or coating on the plate or block thicker than I intend to work upon. After the coating has been well dried I scrape or smooth the surface down to the required thickness with a piece of metal having a perfectly true and even edge or surface. I first trace on this composition or coating the design or pattern in the usual manner now employed by engravers or artists. I then proceed to engrave, etch, scratch, or draw with a steel point or other suitable instrument or machine all the lines or parts of the design through the composition or coating down to the metal or substance on which the composition or coating is laid.

I now describe the second manner of forming my molds or matrices, which is preferable for the coarser patterns or coloring-blocks used in calico or other printing, but may also be applied to finer work.

I take a piece of metal, wood, pasteboard, stone, or composition of plaster-of-paris, of the height of the intended relief, and I glue or otherwise fix the same on a block of wood, metal, or other suitable material. I then cut, engrave, or etch with acid in the usual manner employed by engravers either the outline or the whole of the pattern or design. When the outline only has been cut, engraved, or etched, it is necessary that those parts that are within the outline of the pattern or design should be taken out or removed in order to form a perfect mold or matrix of the pattern or design to be obtained in relief. If acid is used for obtaining this mold in metal, stone, &c., the plate of metal or stone, &c., may be fixed on a block of wood, pasteboard, or any other substance that is not liable to be corroded by the acid used for biting in the mold of design or pattern.

It is necessary, in order to procure a perfectly clear impression from the casts to be obtained from these molds, that some parts should be lowered or depressed, in order that those parts may not receive the printing ink or matter when applied to the relief, and so produce a blurred or imperfect impression on the paper, calico, or other substance to be printed on. In order to effect this I either take a cast from the mold immediately after it is finished by the methods I have before described, and then proceed to finish the cast

ready for receiving the ink, color, &c., by the usual method employed by wood-engravers of cutting, engraving, scooping, or lowering those parts of the cast which, in consequence of the distance between parts of the design, &c., require to be deeper than the rest; or I make use of the following method: After the whole of the design, engraving, or pattern has been engraved, cut, or etched on the composition of white lead and plaster-of-paris, wood, metal, or other substance directed to be used for that purpose, I lay or fix on those parts of the mold required to be heightened for the purpose of obtaining a corresponding depression on the cast or impression to be taken from it with any convenient or suitable instrument modelers' clay or other fine earth or composition to the height required, taking care not to injure or interfere with the design or pattern which has been drawn, cut, or executed on the mold or composition; or the heightening-matter may be laid on in the following manner. Mix chalk, white lead, or any similar substance with water as thick as can be conveniently laid on with a brush, and apply this composition or mixture to those parts of the mold which require to be raised. When this last-mentioned mixture is to be applied to the layer or composition of white lead and plaster-of-paris the mold or design drawn on the plate and layer of composition must be first carefully and slightly oiled.

In order to prepare the molds for the operation of casting, they must always be perfectly dried, which may be effected either by allowing them to dry gradually or baking them. These molds may be cast, stamped, or molded in metal, papier-maché, or other substances now in use for obtaining casts of fine work for ornamental or other purposes capable of being cast, stamped, or molded, and receiving a sharp and clear impression from the mold, and at the same time sufficiently hard for the purposes of printing.

As there is no new feature in the method of obtaining a cast from my mold, I do not consider it necessary to describe the process of casting, stamping, or molding, as they may be cast by any of the usual methods employed for fine casting and known to practical men acquainted with the subject; but for casting fine work, similar to wood-engravings, I prefer the method made use of in the process of stereo-

typing or casting from molds taken in plaster-of-paris from original wood-engravings. Likewise make use of the same metal or composition used for that purpose. Casts may also be formed by placing the mold in any convenient box or form and pouring suitable metal into the mold or design.

The back of the plate is to be turned even in a lathe and mounted on wood in the manner of stereotype-casts from wood-engravings or letter-press. When the plates or reliefs are to be applied to cylinders the metal or substance on which the mold is formed should have a circular or curved form corresponding with the circumference of the cylinder on which the plate of metal or relief is to be fixed; or the plate may be cast level and the required circular direction given by pressure.

It may be observed that I do not claim as new or as part of my invention the mode of cutting, engraving, scratching, or etching with acid for the purpose of forming a sunk design or pattern, as they have long been known and practiced for obtaining impressions on paper, &c., in the manner of copper-plate engraving; but-

I claim as new—

The application of these methods in the manner I have described for the purpose of forming molds from which casts can be obtained in metal or other substances having on their face the relief of the design or pattern which has been so cut or etched in intaglio, and by which means I effect a great saving of time and labor in producing a relief compared with the method or methods now in use of first drawing the design or pattern on wood, and then cutting, engraving, scooping, or removing all the parts or interstices between the lines or tracings of the drawing, which is attended with difficulty and inconvenience, and requires greater labor, time, and skill than is required to form a relief by the methods herein specified.

In witness whereof I, the said GODFREY WOONE, have hereunto set my hand and seal the 21st day of November, in the year of our Lord 1837.

GODFREY WOONE. [L. S.]

In presence of—

JOSEPH MARQUETI,

WILLIAM NOWLAN,

Clerks in the Consulate of the United States,  
London.